

Tennessee's Short-Line Railroads

Programs Policies and Perspectives

Center for Transportation Research
The University of Tennessee

In Conjunction with

The University of Memphis

October 2016



Tennessee Southern Railroad
Busby, Tennessee
May 2011
Photographed by William Davis

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EXSUM

EXECUTIVE SUMMARY AND RECOMMENDATIONS

E1. STUDY CONTEXT

For nearly three decades, Tennessee, through its Department of Transportation (TDOT), has supported the development and rehabilitation of short-line railroads. In the 1980s and 1990s, these efforts helped ensure rail freight service for many Tennessee communities during an era of necessary but disruptive federal transportation reforms. Since that time, these same smaller railroads have regularly helped communities capture economic opportunities that would, otherwise, have been elusive.

Nonetheless, developing and sustaining a successful short-line program is challenging. Many short-line railroads face precarious day-to-day finances and a perennial shortage of investment funds, so that the demands on available public resources invariably outpace funds. Adding to the challenge, Tennessee, like most states, has no obvious means of generating revenues for short-line support and rehabilitation, so that sustaining needed revenue streams is difficult. In combination, these conditions dictate that short-line programs must be as efficient as possible if the state is to extend ongoing support to existing carriers and simultaneously prepare to respond to new freight mobility challenges and opportunities as they arise.

Within this already exigent setting, TDOT's efforts to ensure freight-rail access have been made measurably harder by two independent and unforeseen difficulties that have effectively hobbled the state's short-line program at a time when it may again be called on to avert threats to rail service availability. First, in 2013, the program was suspended based on litigation challenging the form of the fuel taxes used to generate program funds. More recently, fundamental changes to the U.S. economy have led to a rapid and pronounced reduction in the freight volumes moved by the larger, Class I railroads.¹ In response, the large railroads are consolidating traffic onto a smaller number of network routes. These network rationalizations may well lead to a new round of proposed branch-line liquidations, resulting in either abandonment of those branch lines or creation of new short lines. Tennessee communities, facing the potential loss of Class I rail service, must either find alternative ways to preserve railroad access or live with the consequences of its loss.

Against, this backdrop, TDOT engaged transportation faculty from the University of Tennessee and the University of Memphis to evaluate the state's short-line program, to compare its

¹ North American railroads are divided into three classes based on size as measured by annual revenues. Among the largest of these, there are currently seven "Class I" railroads that, by definition have revenues greater than \$475.75 million annually. Class II railroads have annual revenues of less than or equal to \$475.75 million, but greater than \$38.06 million. Class III railroads have revenues of less than \$38.06 million. These definitions are further described in the following text (p. 8).

program attributes to the strategies used in other states, and to begin the process of improving short-line data collection and preparation so that policy-makers will have the benefit of more accurate and timely information. The report presented here describes the results of this collaborative research.

E2. TENNESSEE’S SHORT-LINES AND SHORT-LINE PROGRAM

Depending on definitions, Tennessee currently has 21 operating short-line (Class III) railroads, 18 that function as common carriers and three that operate as private railroads.² All maintain connections with, at least, one Class I carrier. These short-lines operate in 38 of Tennessee’s 95 counties and, while these counties include every major metro area, they also include some of Tennessee’s most rural communities. Most (though not all) of Tennessee’s short-line railroads are depicted in the figure below.

Figure E-1 – Tennessee’s Short-Line Railroads



Prior to the program’s suspension in 2013, all short-line program funds were derived from the rail-related portion of Tennessee’s *Transportation Equity Fund* (TEF), based on fuel taxes paid into this fund by Class I railroads. TDOT funding has not been provided directly to the short-line operators, but is instead, directed toward railroad authorities established pursuant to state statute that have statutory responsibility for distributing funds and managing projects. Prior to suspension, the *Shortline Railroad Bridge and Track Rehabilitation Program* provided capital funding each year. The amount distributed varied each year based on TEF collections, but the amount peaked at \$15 million in 2013. Annual awards to individual carriers were based on the relative conditions of each carrier’s bridges and track structures. Funding for locomotives and other equipment needs has sometimes been addressed through alternative state programs, but has not been a component of the state’s ongoing short-line effort.

² Currently, a fourth Tennessee short-line (the Heritage Railroad) has applied to the STB, seeking to abandon its common carrier status, under an agreement to continue operations as a private railroad. See STB AB 1128X.

E3. COMPARISON WITH OTHER STATES

Class II and Class III (regional and short-line) railroads operate in every state except Hawaii. Of the remaining 49 states, roughly six offer no discernible short-line support. An additional 13 states provide short-line assistance on an *ad hoc* basis, so that (roughly) 30 states have some degree of ongoing short-line support. The comparisons provided here are with these ongoing programs.

The elements of state programs also differ significantly from one state to another. Some states are focused on commuter operations and short-line freight services are a secondary concern. States that depend heavily on agriculture are sometimes more oriented toward seasonal freight needs. In many states, the transportation functions and attributes of short-lines are inexorably tied to economic development activities. Again, the variety evidenced in state programs is significant.

The diverse nature of short-lines and short-line programs makes state-by-state comparisons difficult and the results are, at best, imprecise. However, there are three conclusions that seem justified. First, the level of freight-oriented short-line funding in Tennessee has, since 1987, been consistently among the highest among states with short-line programs. Again, while a precise comparison is impossible, the available data suggest that, track-mile-for-track-mile, Tennessee's contributions toward the support and rehabilitation of its short-lines place it among the top six or seven states with ongoing freight programs.

Second, states that have ongoing, well-funded and ambitious short-line programs generally tie those ambitions to the state's broader economic development strategies. Iowa, Oregon, and Wisconsin stand out in this regard. In Tennessee, "The key goal of the railroad portion of the Transportation Equity Trust Fund is to provide economic development and benefit to local communities served by recipient railroad authorities."³ However, the performance audit report from which this statement is drawn, developed by the Tennessee Comptroller of the Treasury, also suggests that the state's pursuit of this goal cannot be easily demonstrated based on current reporting practices.

The third conclusion is that Tennessee's condition-based project funding award process does not follow a national pattern that also includes incremental economic benefits as a decision criterion. Indeed, as a part of the current study a national cross-section of short-line operators was surveyed and these operators indicated that clearly defined benefit-cost analyses (BCAs) are required in 70 percent of the states where they receive support from state short-line programs.

E4. FUNDING ISSUES AND ALTERNATIVES

The litigation referenced above is based on specific federal provisions contained in the *Railroad Revitalization and Regulatory Reform (4R) Act of 1976* which prohibits, "The imposition of any other (non-property) tax which results in discriminatory treatment of a common carrier by

³ See Comptroller (2015, p. 9)

railroad. . .”⁴ Originally, Class I carriers claimed that the seven percent sales tax paid by railroads for fuel purchases was materially different than the 17 cents per gallon excise tax paid by motor carriers. The Tennessee legislature sought to remedy that issue in 2014 through the passage of a statute that effectively exempts railroads from any fuel-related sales tax liability, making them liable instead for a 17 cents per gallon excise tax identical to the fuel tax paid by motor carriers. Now, however, the Class I carriers maintain that Tennessee’s current policy exempting waterborne freight carriers from the same excise tax provides an advantage to commercial navigation and is, therefore, in violation of the 4R Act. ⁵

The study team assembled here cannot evaluate the legal merits of the railroads’ affirmative case, or the validity of the state’s defense. It is apparent, however, that this matter has broad implications and that it is unlikely to be resolved in the near term. Thus, any hope of resuming Tennessee’s short-line program in the near term rests on one of two courses, including (1) legislative action (state or federal) that resolves the current conflict; or (2) the identification and adoption of an alternative funding source that can be used does not rely on the current regime of carrier fuel taxes.

Practices by other states suggest three possible approaches to funding short-line programs.. These include:

- The dedication of railroad derived property taxes to short-line railroad support ;⁶
- The substitution of an unrelated but still dedicated revenue source; or
- A reduction of state support and the substitution of general state revenues in support of programs designed to leverage private sector short-line investment.

Section 5 provides further discussion of these alternatives. Suffice it to say, no single course is a perfect fit for Tennessee. However, revenue development experiences in other states can provide a useful basis for discussion. In any case, there are two certainties. First, any forthcoming revenue alternatives should avoid the legal characteristics that have led to the current litigation. Specifically, if Tennessee opts to pursue an alternative short-line program funding method, that alternative must not disadvantage railroads in comparison to other modes of freight transportation so that it unambiguously and unarguably compliant with the 4R Act. Any new measure that fails this standard will offer no improvement. The second certainty is that finding a solution to the issue of short-line funding is urgent. The current uncertainty surrounding the support and availability of Tennessee’s short-line railroads could very easily reduce their future usefulness if left untreated.

⁴ Railroad Revitalization and Regulatory Reform Act of 1976 § 306(1)(d).

⁵ The litigation is described extensively in Section 5 or, for more concise summary, see Williams (2014).

⁶ As a cautionary note, the same provisions of the 4R that more generally prohibit taxes that discriminate against railroad carriers impose specific restrictions on state (or sub-state)-level property taxes levied against railroads.

E5. SUMMARY AND RECOMMENDATIONS

Tennessee's *Shortline Railroad Bridge and Track Rehabilitation Program* has provided both large and small communities with a means of preserving freight rail access in the face of probable disruption. In doing so, this program has sometimes afforded these communities economic opportunities they'd have not had otherwise. Nonetheless, this program faces significant challenges. Specifically, the currently prescribed source of program funds is tangled in a set of complex legal proceedings at precisely the time when the program's availability and stability may be of even greater importance to Tennessee. Further, practices in other states suggest Tennessee's method of allocating program resources, based on physical conditions and without regard to economic outcomes, diminishes the magnitude of achievable benefits.

Based on the information provided below, the short-line program's history of success, and the forward-looking anticipation of even greater need, the study team offers the following conclusions and recommendations:

- **Doing nothing is doing something.** A failure to repair or replace the current short-line support program is equivalent to an overt decision to discontinue it.
- Policy-makers must decide whether to continue traditional levels of program funding or opt for a revised program format that can be sustained with fewer resources provided through transportation funds marked for freight mobility or general revenues. Resolving funding issues, and doing so soon, is at the center of future state policy.
- While current circumstances impose urgency, they also provide an opportunity to improve Tennessee's short-line program. As necessary fixes are made, the resulting new program can incorporate experiences gained by other states and also better reflect forward-looking freight transportation conditions and needs in Tennessee.
- The GIS platform provided here is a useful step in integrating short-line availability and improvements into broader economic development activities. This should be followed by additional collaborative efforts between Tennessee's Department of Transportation and the Department of Economic and Community Development to ensure that the state's short-line railroads provide the greatest possible benefits to state residents.
- One of the key lessons learned from other states is that increased scrutiny of candidate short-line improvements can reduce the magnitude of necessary state support. It is also useful in helping to integrate short-line availability into broader economic development strategies. This scrutiny can be achieved through the internal imposition of benefit-cost standards and/or through the requirement of meaningful external matching funds.
- Ensuring and improving safety outcomes is an essential element in every public sector transportation activity. This is certainly true in the case of short-line oversight and support. Accordingly, both the monitoring of and state support for safety-related activities should be carefully segregated from activities designed to sustain and enhance the economic value of Tennessee's short-line railroads.

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ONE

INTRODUCTION AND PURPOSE

Tennessee's rail heritage is rooted in short-line railroads. Here, as throughout the South, the first railroads were generally small, unconnected routes that tied together a sprinkling of communities. Early, east-west trunk lines were built to the north of Tennessee; transcontinental railroads usually had an eastern terminus west of the Mississippi; and system network building in the Southeast did not begin in earnest until the end of the 19th century. Even then, as larger systems emerged, Tennessee still featured a number of short-line railroads. Primarily in more mountainous terrain, these railroads survived well into the 20th century hauling timber products or various ores.

Nonetheless, throughout the last century, at least prior to 1980, short-line railroads declined in number. Most of the nation's short-lines were either consolidated into parent railroads or abandoned. In 1980, however, this pattern changed. Through its many provisions, the federal *Staggers Rail Act of 1980* greatly accelerated and simplified the process of branch-line abandonment and heightened the degree of surface freight competition, so that larger Class I railroads had both the incentive and ability to shed thousands of lesser-used route-miles.⁷ As hundreds of small and medium-sized communities faced a potential loss of rail service, short-line freight railroads often emerged as an attractive transportation alternative. Thus, in the generations since regulatory reform, Tennessee, like many states, has embraced and supported short-line railroads as a maturing and integral part of the state's surface freight network.⁸

Today, in Tennessee, there are 21 operating short-line railroads, 18 that function as common carriers and three that operate as private railroads. Together, these short-lines are an important segment of the state's freight transportation landscape. They serve as a cushion between community needs and the brutal world of global commerce and also help preserve economic opportunities that would, otherwise, disappear. Moreover, currently unfolding structural changes to the U.S. economy and corresponding changes in how, when, and where freight is moved are likely to amplify the importance of these short-line functions.

⁷ Staggers Rail Act of 1980 § 402.

⁸ For a general discussion of Staggers' effects on the re-emergence of short-line railroads, see Philip Fischer, John Bitzan, and Denver Tolliver, "Analysis of Economies of Size and Density for shortline Railroads," North Dakota State University, October 2001.

With this importance noted, resources for the support of short-line railroad operations in Tennessee are clearly limited and must be marshaled carefully to ensure the best possible outcomes for the state. Currently, oversight and support for Tennessee’s short-line railroads is shared between locally developed rail authorities and the Multimodal Division within the state’s Department of Transportation (TDOT) and it is the latter of these that has commissioned the current study and analysis.⁹ This work has three purposes, including:

- The development of a Geographic Information Systems (GIS) data platform and additional information-gathering processes to improve state-wide short-line monitoring, support, and integration into non-transportation state programs;
- A review of Tennessee’s current scope, scale, and methods for short-line support in light of newly emerging, structural transportation changes and with the benefit of “best-practices” as observed in other states; and
- A review of the state’s current method of funding short-line programs that reflects both ongoing litigation and the funding experiences of various comparison states.

Based on these goals, the balance of the current document is organized as follows – Section Two provides a general description of the nation’s system of short-line railroads, with particular attention to short-line operations in Tennessee. This section also includes a discussion of the freight industry structural changes noted above. The section concludes with an introduction to the various elements that generally combine to form specific state rail and short-line programs.

In Section Three, we describe Tennessee’s short-lines and its state-wide short-line assistance programs. This includes a comparison of Tennessee’s program elements with the attributes of similar initiatives in other states. This section also includes an evaluation of similar *federal* programs and of initiatives that seek to blend local, state, federal, and private sector interests. Section Four, continues this discussion, but does so from a short-line operator perspective. Specifically, within this section, we describe and analyze the results of an anonymous survey completed by short-line managers from across the U.S.

Section Five takes up the issue of funding for Tennessee’s statewide short-line programs. The current funding mechanism (fuel taxes levied in support of the state’s Transportation Equity Fund) continues to be at the center of ongoing litigation, so that exploring the alternative sources of available funds developed by other states the and corresponding funding magnitudes seems particularly relevant. Summary finding are provided in Section Six.

Finally, in an attached technical appendix, we describe efforts undertaken to develop a GIS platform that provides basic information describing Tennessee’s short-line railroads and that also can serve as a flexible and valuable tool for updating existing data and adding various new data attributes to the toolkit available to TDOT’s analytical and policy teams.

⁹ A current listing indicate 21 Tennessee short-lines. However, this listing includes the Franklin Industrial Railroad which technically is not a common carrier railroad under federal law. For a description of relevant Tennessee laws describing the formation and operation, and responsibilities of a railroad authority, see, Tennessee Annotated Code, Title 64, § 2.

TWO

SHORT-LINES AND REGIONAL RAILROADS: THE BASICS

The nation’s nearly 600 “short-line” railroads play key roles in providing freight mobility, both in Tennessee and across the U.S. However, with this noted, these “smaller” railroads are extraordinarily diverse in, size physical, characteristics, transportation function, and economic roles. The purpose of this section is to explore and describe this diversity, with a particular eye toward Tennessee’s short-lines and with no small amount of attention to how the demands on and roles of these railroads may be amplified by changes in the current national freight transportation environment.

2.1 DEFINITIONS, CHARACTERISTICS, AND FUNCTIONAL ROLES OF SHORT-LINE RAIL CARRIERS

DEFINITIONS

Formally, American railroads are divided into three groups or classes, largely based on annual revenue thresholds.¹⁰ For 2014, these Class definitions were

Class I	Revenues greater than \$475.75 million
Class II	Revenues less than or equal to \$475.75 million, but greater than \$38.06 million
Class III	Revenues less than or equal to \$38.06 million

Informally, Class II railroads are often referred to as regional railroads, while Class III railroads are labeled “short-lines” or “local carriers”. Table 1 provides a small number of operating statistics based on these definitions.

Table 1 – Characteristics of Class I, Class II, and Class III Railroads 2012

	Class I Railroads	Class II and Class III Railroads
Number of Carriers	7	567
Number of Employees	163,464	6,800
Number of Route-Miles	95,249	42,749

¹⁰ FRA (2015) indicates that, “All switching and terminal carriers regardless of revenues are Class III carriers. (See 49 CFR 1201.1-1)

REGIONAL v. SHORTLINE

At the time of publication, the Federal Railroad Administration (FRA) estimated there were eleven Class II, or *regional*, railroads. These eleven midsized carriers are very different in character from their 556 short-line counterparts. Table 2 uses the lower quartile in each applicable revenue range, along with a hypothetical set of parameters for each railroad, to illustrate these differences. Based on these parameters, the Class II (or regional) railroad would need to operate three trains each day, each direction over its entire 300 mile route to attain the specified revenues. However, the Class III railroad would need to operate only one or two trains each day, in each direction over a much smaller, 50 mile line to attain its specified revenues. *Currently, in Tennessee, all non-Class I railroads are Class III based on annual revenue.*

Table 2 – Hypothetical Class II and Class III Operating Statistics

	Class II Railroad	Class III Railroad
Annual Revenue	\$147,482,500	\$9,515,000
Ton-Mile Rate	\$0.05	\$0.08
Ton-Miles	2,949,650,000	118,937,500
Tons per Car	100	90
Car-Miles	29,496,500	1,321,528
System Miles	300	50
Annual Loads	98,322	26,431
Annual MTs (ETR=0.75)	73,741	19,823
Total Cars	172,063	46,253
Annual Tons	9,832,167	2,378,750
Cars per Train	80	40
Trains / Year	2,151	1,156
Trains / Week	41	22
Trains / Day	6	3

FREIGHT v. PASSENGER

The definitions for Class I-III railroads provided above do not distinguish between revenues gained from moving freight versus revenues paid for passenger carriage. Accordingly, while most short-line railroads are freight only, some carry strictly passengers (commuter railroads). Moreover, there are a number of Class II and Class III railroads that form part or all of passenger routes operated by Amtrak. Finally, it is not unusual to find Class II or, particularly, Class III short-line railroads to either operate or host commuter trains. This latter circumstance is the case for Nashville's *Music City Star* which, while operated by the Regional Transportation Authority of Middle-Tennessee, traverses railroad controlled by the Nashville & Eastern.

LINE-HAUL v. TERMINAL

All Class II and most Class III railroads are considered "line-haul" in nature, that is the transport freight or passengers between two distinct locations, but there is a second important class of short-line carriers which are referred to as "terminal" or "switching" railroads. These railroads are found primarily (though not exclusively) in metropolitan areas. Sometimes these

terminal railroads never directly serve railroad customers, but are, instead, engaged wholly in transferring traffic between connecting railroads (both other short-lines and Class I carriers). Often the charges levied by terminal railroads are not mileage-based, but are instead flat-rate fees or zonally-based. In some cases (for example, the Belt Railway of Chicago or the Kansas City Terminal Railway), these railroads are owned by the larger railroads for which they provide connections. In other cases (for example, the New Orleans Public Belt Railroad), the terminal railroads are independently owned. In either case, however, their operating characteristics are generally, quite different from those of line-haul short-lines. Notably, while several of Tennessee's short-lines are technically classified as "switching" railroads, most function more as traditional short-lines rather than terminal railroads. Exceptions to this include RJ Corman's Tennessee Terminal Railroad in Memphis, the East Tennessee Railroad at Johnson City, and Chattanooga's Tyner Terminal Railway.¹¹

MANAGERIAL AND CULTURAL DIFFERENCES

Class II and Class III railroads are remarkably diverse in nature. However, if there is one common factor shared by nearly all of them, it is that almost none of them is remotely similar to its Class I counterparts. Indeed, the dichotomy between Class I and regional or short-line railroads is breathtaking and is evident in almost every aspect of railroad management and operations that is not subject to federal regulation. Differences extend to equipment purchases and leases, labor relations and work rules, train scheduling and dispatching, infrastructure investments, administrative functions, etc. As a generally accepted rule, regional railroads and short-lines – particularly short-lines – exhibit a degree of flexibility that provides a distinct cost advantage in a small scale setting vis-à-vis a Class I railroad. Alternatively, short-line railroads cannot compete (at least, indefinitely) with Class I carriers when traffic volumes exceed a certain threshold.

HOLDING COMPANIES

Many of today's 600-plus short-lines were spun-off from Class I railroads. A smaller number have never been directly controlled by larger railroads and are a throwback to the 19th century industry structure. However, regardless of their histories, a large number of America's short-lines are currently owned by and organized within holding companies that often operate properties in widely disparate geographic regions. Holding companies generally manage short-lines in ways that retain a localized focus and small-scale cost advantages, while simultaneously, pursuing the large-scale procurement, equipment management, and human resources advantages more typically associated with Class I railroads.

Table 3 summarizes the U.S. operations of the five largest short-line holding companies which often also operate internationally. These holding companies acquire and manage exclusively Class III properties and, as the table suggests, control roughly 30 percent of these short-lines. Again, while precise data are not available, anecdotal information suggests that holding company shares of short-line generated ton-miles total nearly double that amount, or approximately 60 percent of the short-line total.

¹¹ The Tyner Terminal Railway is a wholly owned subsidiary of the Tennessee Valley Railroad Museum.

Table 3 – Class III (Short-Line) Railroad Holding Companies

Holding Company	Railroads Operated	Industry Share ¹²
Genessee & Wyoming	95	16.8%
WATCO	32	5.6%
OmniTRAX	19	3.4%
RJ Corman	11	1.9%
Patriot Rail	10	1.8%
5-Firm Totals	167	29.5%

Several Tennessee short-lines (The Tennessee Southern, RJ Corman Memphis Line and Tennessee Terminal, the East Tennessee Rwy., the KWT, Mississippi Central, and the Chattanooga and Chickamauga) are owned by one of these five largest holding companies and, in fact, nearly all of the state’s common carrier short-lines are owned by entities that control more than one railroad property.

2.2 THE RELATIVE IMPORTANCE OF SHORT-LINE RAILROADS IN RAIL FREIGHT

Based on what can only be “best estimates”, the seven Class I railroads control roughly 70 percent of railroad route-miles, 80 percent of track-miles, 85 percent of all rail-provided ton-miles of service, and 95 percent of all railroad-generated revenues.¹³ It is, therefore, hard to dispute the economic dominance of the seven truly large, Class I railroads. However, it would be equally wrong to under-represent the economic importance of regional and short-line railroads, at least, in some circumstances.

Figure 1 is a reproduction of a national map depicting America’s regional and short-line railroads in 2012. Figure 2 depicts short-line route miles as a proportion of total freight railroad mileage within each state for the same year. Within these figures there are several discernible patterns, a few readily explained anomalies, and a handful of outcomes that seem inexplicable.

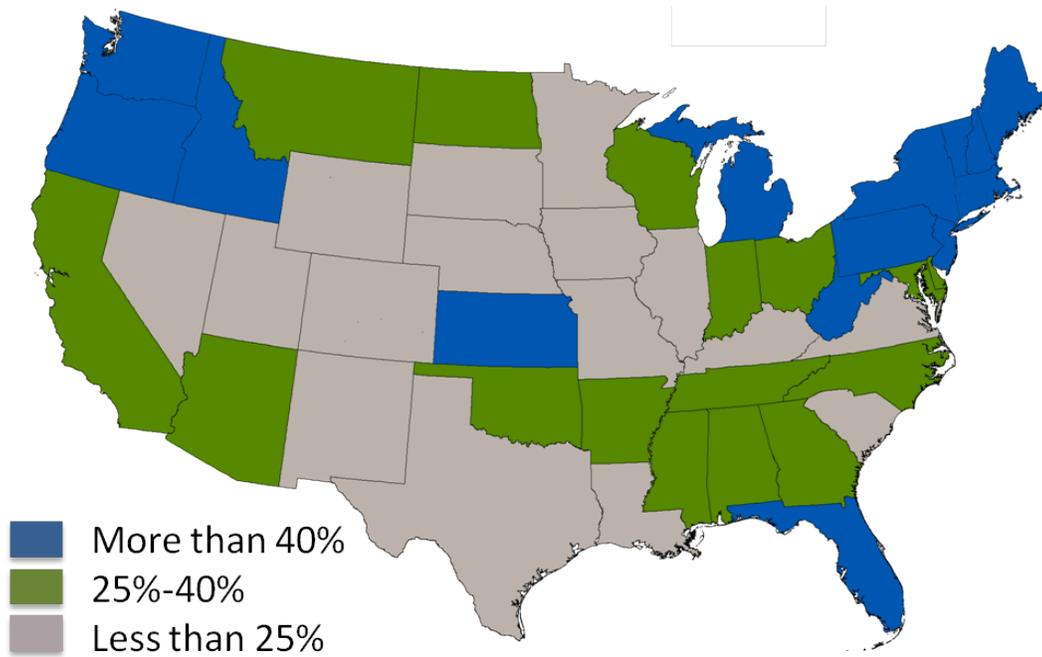
¹² Here, industry share, is measured by the number of short-line properties under the holding company’s control. Alternative share definitions based on route-miles, annual cars loaded, or the number of ton-miles would yield different share values.

¹³ Arguably one cost advantage enjoyed by Class II and Class III railroads is an absence of the reporting requirements faced by Class I carriers. Unfortunately, this lack of mandatory reporting also makes it impossible to develop precise Class I – short-line comparisons. Note: *route-miles* denote point-to-point mileages regardless of track configuration or yard tracks. *Track-miles*, however, include all main-line tracks plus ancillary trackage. Thus, the data suggest that Class I carriers not only control more route-miles, but these same data suggest that the Class I mile-for-mile route capacity is greater.

Figure 1 – Class II and Class III Railroad Trackage (2012)



Figure 2 – Ratio of Class II and Class III Route Miles to Total Route-Miles



To begin, Class II and Class III presence is clearly evident in the traditional Northeast. This squares with a great deal of economics, demographics, and railroad history. This is the region where America's railroads first developed with any great density. This is also the region that was most impacted by the near collapse of the railroad industry in the 1960s and 1970s. Finally, the Northeast was the first region to see a measurable out-migration of traditional manufacturing. In combination, these factors suggest a region where short-line opportunities were plentiful and where preserving rail service has been difficult. Unfortunately, none of these factors are available to explain the equally important presence of short-line railroads in the Pacific-Northwest (PNW). In fact most historical outcomes in the PNW are the reverse of those observed in the Northeast.

There is also a consistent, but less pervasive short-line presence in the Southeast, at least, with the exception of South Carolina, where short-lines account for a small share of route-miles and in Florida, where Class I and Class II route miles are in relative abundance. The latter result is explained by the Florida East Coast (FEC), a 350-mile, Class II railroad that stretches between Jacksonville and Miami. The only readily available explanation for the lack of short-line route-miles in South Carolina is the absence of state-level support for short-line activity.

Indeed, if we allow the degree of state-level activity to help explain the results depicted in Figures 1 and 2, additional inferences are possible. For example, Indiana, Michigan, Ohio, Pennsylvania, and Wisconsin each have had long-standing and active freight rail preservation programs and each has an average or better short-line presence.

Ultimately, however, it would probably be imprudent to lean too heavily on the data depicted in these figures. Both reflect short-line route miles, but neither provides any information regarding the volume of short-line traffic that moves along these routes or associated revenues.

2.3 THE ROLE OF SHORT-LINES DURING TIMES OF TRANSITION

HISTORY AS AN EXAMPLE

As noted, rail industry regulatory reforms were capped by the *Staggers Rail Act of 1980* and are directly credited with a surge in short-line activity. After peaking at approximately 700, the number of U.S. short-lines had fallen to roughly 200, by 1980.¹⁴ However, the Staggers-related changes to abandonment processes, led to a burst in Class I branch-line spinoffs. Babcock, et al, (1997) indicate that 227 new short-line railroads were formed between 1980 and 1989.¹⁵

The short-lines formed in the decades after Staggers have faced various fates. Many of the Staggers-related short-lines prospered; some did not. Some of the smallest short-lines of the 1980s and 1990s were combined with other short-lines or acquired by holding companies, and some were reabsorbed by the Class I railroads that divested them or by competing Class I's.

¹⁴ See Fischer, et al (1981).

¹⁵ For a further, popular discussion of Staggers and short-line railroads, see Stagl (2008).

In a sense, the fact that not every short-line railroad prospers is irrelevant. In a time of tremendous structural change, the short-line alternative allowed Class I railroads to make badly needed reductions to their large, multistate networks, while simultaneously allowing communities to preserve railroad network access. In some cases, this preservation ultimately may have proven unnecessary, but in other cases, the continued rail access afforded through short-line development has had very visible economic impacts.

There are several such cases in Tennessee worth noting. In Middle Tennessee, railway-waterway developments in Clarksville depend on rail connectivity provided by RJ Corman's Memphis Line and its connection to CSX. In metro Nashville, the development of the *Music City Star* and its access for commuters would have been impossible absent the Nashville & Eastern. Finally, the Caney Fork & Western is critical to Bridgestone's expanded presence in Warren County.

In East Tennessee, Knoxville's *Forks of the River* industrial complex is served by the Knoxville and Holston River which provides connections between the waterside facility and both CSX and Norfolk Southern.¹⁶ And finally, Volkswagen's transformative presence in Chattanooga was made possible by rail access that is dependent on the operations of the East Chattanooga Belt Railway and its parent, the Tennessee Valley Railroad Museum. Rail network access alone did not create these opportunities, but it was an essential to each of them. That access may have been lacking had rail capacity not been preserved through the support of short-line railroads.

FUTURE IMPORTANCE OF A SHORT-LINE ALTERNATIVE

The post-Staggers role played by short-line railroads in preserving rail network access is particularly instructive given the turmoil that is evident in today's world of freight railroads. After three decades of prosperity and growth, a confluence of seemingly independent events now threatens the financial viability and continued availability of Class I rail service throughout much of the eastern U.S.

Burton, et al (2015), provide a fuller description of current freight rail challenges. Essentially, however, these difficulties are attributable to (1) the rapid reductions in the use of coal to generate electricity, (2) an unfunded federal mandate forcing the installation of Positive Train Control (PTC), and (3) cyclical conditions related to exchange rates and corresponding export volumes that have, at least temporarily, reduced the movement of non-coal commodities.¹⁷

¹⁶ Readers will note that Knoxville's Forks of the River involves the multimodal connection of railroad freight services with commercial navigation. This sort of multimodal connectivity continues to be a priority within state policy.

¹⁷ Historically, coal has accounted for up to 45 percent of railroad revenues. So far (20014-2016), these volumes have decreased by roughly 40 percent and are expected to fall further over the coming decade.

Positive Train Control (PTC) is a federally mandated set of highly advanced communication technologies designed to automatically stop trains before certain types of accidents occur. To date, the Class I railroads have spent approximately \$7 billion toward PTC's development, testing, and deployment. The final nationwide cost is estimated to be between \$15 and \$22 billion.

The Class I railroads, particularly, CSX and Norfolk Southern, have responded to these challenges with strategies that simultaneously address all three. Primarily, the railroad reaction is to consolidate surviving coal and non-coal traffic onto fewer network route segments, operate longer trains along, these routes, and cease or dramatically reduce operations on downgraded, nonessential route segments. These actions also have allowed both CSX and NS to idle terminal facilities in several locations. A summary of Class I railroad actions undertaken in the last six months in response to the aforementioned economic challenges is provided in Table 4.

To date, Class I railroads have not proposed any branch-line abandonments in response changes in coal volumes, mandated expenditures on PTC, or onset of cyclical traffic declines. Instead, they seem inclined to adopt reversible cost cutting measures as they work to identify transient versus lasting economic changes. Thus, various affected jurisdictions have time to consider policy alternatives for preserving freight mobility. For those states with active short-line programs the set of available alternatives is measurably larger.

Table 4 – Eastern Class I Responses to Emerging Economic Challenges
(October 2015 – June 2016)

Description	States Affected
CSX TRANSPORTATION	
Downgraded or idled trackage on former C&O and Clinchfield routes between Russell, Kentucky and Spartanburg, SC	KY, VA, TN, NC, SC
Closed shops and yard facilities at Erwin, TN	TN
Closed shop facilities at Corbin, KY	KY
Ceased yard operations at Russell, KY	KY
Downgraded trackage between Russell, KY and Cincinnati, OH	KY, OH
Eliminated Division HQ at Huntington, WV	WV
NORFOLK SOUTHERN CORP.	
Closed John Sevier yard in Knoxville, TN	TN
Downgraded route between Knoxville, TN and Middlesboro, KY	TN, KY
Downgraded route(s) between Morristown, TN and Salisbury, NC (via Asheville)	TN, NC
Eliminated Division HQ at Bluefield, WV	WV
Leased "West Virginia Secondary" between Columbus, OH and Mullens, WV to WATCO	OH, WV
Closed coal pier at Ashtabula, OH	OH

2.4 ELEMENTS OF STATE-LEVEL SHORT-LINE PROGRAMS

Section 3 provides a thumbnail sketch of Tennessee's 20 short-line railroads and the state's short-line programs are discussed at length in Section 4. Here, however, we begin the evaluation process by presenting a summary of the elements that form the various state-level short-line programs evidenced across the U.S.

DIVERSITY OF PROGRAM GOALS

As described above, Class II and Class III railroads come in many forms and serve many transportation functions. Thus, a state's specific short-line program must function against the backdrop of available railroads and the state's specific goals.

On the freight side of such programs, the simplest goal is likely to be the preservation of the status quo. In such cases, programs are designed to assure current rail users future rail-freight access. However, program ambitions reach no further. These purely *preservation* programs stand in contrast to state freight-rail programs aimed at mitigating congestion on other surface modes or generating economic development based on *improved* rail freight mobility. Simple preservation programs typically require fewer financial resources, but also qualify for funding from a smaller number of sources.

ONGOING v. TRANSIENT SHORT-LINE SUPPORT

Most states have programs that, at least, monitor short-line operations and supervise grade-crossing and other safety-related interactions. However, among states that provide short-line support, a little more than half are ongoing or indefinite in timeframe, while the remainder of state programs are designed with a finite (often one year) duration. Obviously, which approach is most appropriate depends on program goals and available funding sources.

PASSENGER AND / OR FREIGHT

Like most modes, railroads can be used to transport both passengers and freight. Moreover, if community, regional, or state goals seek to promote *both* passenger and freight rail use, these goals can usually be achieved more affordably if freight and passenger transportation are produced together across an integrated rail system. Indeed, sometimes, limited right-of-way availability leaves little choice in the matter.¹⁸ However, with that noted, passenger and freight services have very different operating characteristics, very different financing needs, and very different potential funding sources. Thus, combining freight and passenger operations within a single program significantly increases program complexity.

OWNERSHIP AND GOVERNANCE AND FORMS OF CAPITAL

Tennessee's short-line program and associated governance structure are described in Section 3. As that section details, short-lines receiving state support can be owned by independent firms, local jurisdictions, or directly by state-sanctioned rail authorities. Moreover, setting aside grade-crossing and other safety issues, state influence over a short-line's capital investments only

¹⁸ As noted in Tennessee's Statewide Rail Plan [CITE SRP], taking advantage of this complementary relationship is a goal of state rail policy.

exists if that short-line wishes to participate in state-level programs. The state of Tennessee neither owns, directly controls, nor operates railroads. However, this model of ownership, control and governance is only one variant used among the many states. In some states direct state ownership is, in fact prescribed. Alternatively, other states have adopted policies that are more “hands-off” than Tennessee’s.

The same policy diversity is also evident in the various state approaches to the forms of capital that are supported by state rail programs. Few states have programs that will support ongoing operations; most are directed at the acquisition, upkeep, and improvement of capital assets. However, the forms of capital supported by state programs vary widely. In some states, support is extended to a full range of assets including locomotives, freight or passenger cars, bridges, terminals, and line-haul trackage. Other state programs are more restrictive, allowing improvements to track and other structures, but prohibiting state support for locomotives or railroad cars. Tennessee’s programs fall into this latter grouping.

CLASS I, II, OR III

Most state rail programs preclude support to Class I railroads, but there are notable exceptions, particularly when programs are of a limited duration and are being pursued with narrowly focused goals. Few, if any, state rail programs distinguish between Class II (regional) and Class III (short-line) railroads.

GRANTS v. LOANS, COMPETITION, AND MATCHING FUND REQUIREMENTS

Just as there is variety in what state short-line programs will support, there are considerable differences in the forms of awards and the processes through which they are made. As described below, Tennessee’s short-line program provides grants to recipients that are primarily based on existing infrastructure condition. Programs in other states often opt, instead, for direct loans, loan guarantees, or a hybrid blend of financing methods. Similarly, in those states that, like Tennessee, rely on grants for short-line support, there is also variation in matching requirements and eligible sources of matching funds. Finally, the criteria used to judge proposed applications and allocate rewards also vary among states. However, increasingly, following practices established through the federal TIGER grant selection and award process, many states are requiring some form of benefit-cost analysis in conjunction with applications.

MAGNITUDE AND SOURCES OF SHORT-LINE FUNDING

The entirety of Section 5 is dedicated to the issue of rail / short-line program funding. Clearly, however, the nature and magnitude of funds is integrally tied to program purpose, duration, and size. Further both purpose and size can also influence the availability of federal funds or third-party private funding as either substitutes for or additions to state resources.¹⁹

¹⁹ “TIGER” is an acronym for Transportation Infrastructure Generating Economic Recovery, a federal grant program that began as a fiscal response to the 2007-2009 economic recession, but which has emerged as a component of ongoing federal transportation policy. TIGER grant applications now must include a carefully designed and executed benefit-cost analysis, in addition to other economic information.

THREE

TENNESSEE'S SHORT-LINES AND SHORT-LINE PROGRAMS

Section 6 describes the study team methods used to produce more accurate and flexible Geographic Information System (GIS) coverages depicting the locations and attributes of Tennessee's short-lines railroads. These coverages also include a linear referencing system that will allow the incorporation and updating of additional network attributes as these become available. Our purpose in this section is to sketch a collective representation of these railroads, to describe Tennessee's short-line program, and to explore program element alternatives based on practices identified in other states.

3.1 TENNESSEE'S SHORT-LINE RAILROADS

Table 5 is a summary catalogue of Tennessee's short-line railroads. In total, these railroads serve 38 individual Tennessee Counties and operate an average of 47 route-miles, with 39 route-miles inside Tennessee's borders. Nearly all of these short-lines (18 of 21) trace their origins to Class I carriers and many (12 of 21) were formed between 1980 and 1989. They are, on average, 25 years old. Most of these short-lines are also depicted in Figure 3.

While each of Tennessee's short-lines is able to interchange traffic with one Class I railroad, only five have more than one potential interchange partner and only one – the West Tennessee Railroad – has more than two. Of the 21 total carriers described in this table, only one – the Nashville & Eastern – hosts regularly scheduled passenger movements. All other indicated railroads are freight-only, feature seasonal tourist operations, or periodically host passenger excursions.

Readers who are familiar with past TDOT descriptions of the state's short-line railroads will note some subtle differences between the current and past listing. Two railroads are no longer included and one has been added. Specifically, the National Coal Company Railroad, ceased operations in 2010 and was purchased at that time by the RJ Corman parent organization. All indications are that this trackage has been or will soon be abandoned. The second deletion from the current listing is the Mississippi Tennessee Railroad which formerly operated between New Albany, MS and Middleton, TN. All but the last 1.2 miles of this railroad have been abandoned and the remainder is currently used exclusively for equipment storage. Finally, RJ Corman's Tennessee Terminal Railroad has been added to the list of state short-lines.

Table 5 – Tennessee’s Short-Line Railroads

Railroad Name	Reporting Mark	AAR Num.	TN Miles	Total Miles	Class I Origin	Short Lined	Inter-Change	Tennessee Counties	Railroad Authority
CLASS III RAILROAD COMMON CARRIER									
Caney Fork and Western Railroad	CFWR	187	59.1	59.1	CSX	1983	CSX	White, Warren, Coffee	Tri-County
Chattanooga and Chickamauga Rwy.	CCKY	116	5.7	65.7	NS	1989	NS	Hamilton	Owned by the State of Georgia
East Chattanooga Belt Railway	ECTB	174	13.0	13.0	NS	2001	NS	Hamilton	Hamilton County
East Tennessee Railway	ETRY	257	5.0	5.0	NA	NA	CSX, NS	Washington	East Tennessee
Heritage Railroad Corporation	HR	353	9.5	9.5	NA	NA	NS	Anderson	Oak Ridge Heritage
Knoxville and Holston River Railroad	KXHR	413	18.0	18.0	NS	1998	NS, CSX	Knox	Knox County
KWT Railway	KWT	996	49.7	70.1	CSX	1987	CSX	Weakley, Carroll, Henry	Carroll-Henry County
Mississippi Central Railroad Co.	MSCI	564	4.7	62.7	ICG	1982	NS, BNSF	Fayette, Hardeman	None
Nashville and Eastern Railroad	NERR	934	116.6	116.6	CSX	1986	CSX	Davidson, Wilson, Smith, Putnam	Nashville and Eastern
Nashville and Western Railroad	NWRR	570	18.0	18.0	NA	1986	NS	Davidson, Cheatham	Cheatham County
RJ Corman Memphis Line	RJCM	792	33.5	115.1	CSX	1987	CSX	Stewart, Montgomery	Montgomery County Rail Service Authority
RJ Corman Tennessee Terminal	RJCK	928	25.0	47.0	BNSF	2006	BNSF	Shelby	None
South Central Tennessee Railroad	SCTR	673	45.0	45.0	L&N	1978	CSX	Dickson, Hickman, Lewis	South Central Tenn.
Sequatchie Valley Railroad	SQVR	910	5.5	8.5	CSX	1986	CSX	Marion	Marion County Railroad
Tennessee Southern Railroad	TSRR	798	100.4	116.4	CSX	1989	CSX	Maury, Lawrence, Giles	Tennessee Southern
TennKen Railroad Co.	TKEN	745	41.9	52.9	ICG	1983	CN, RJC	Dyer, Lake	TennKen
Walking Horse and Eastern Railroad	WHOE	390	7.9	7.9	CSX	1985	CSX	Bedford	Bedford County
West Tennessee Railroad	WTNN	258	100.5	104.0	ICG NS	1989 2001	CSX, NS, KCS, CN	Weakley, Gibson, Madison, Chester, McNairy	Gibson County Railroad
PRIVATE RAILROAD CARRIERS									
Franklin Industrial Railroad	NA	NA	13.0	13.0	NS	2001	NS	Cumberland, Roane	Cumberland County
Hiawasse River Railroad	NA	NA	38.0	38.0	CSX	2001	CSX	McMinn, Polk	None
TVRM (Tyner Terminal Railway)	NA	NA	2.7	2.7	NS	NA	NS	Hamilton	Hamilton County
ALL SHORT-LINES			713.9	989.4		1991		38 Counties	16

As a brief demographic aside, Table 6 provides 2014 county population estimates and population rankings for the counties served by Tennessee’s short-lines. While this list includes Shelby, Davidson, Knox, and Hamilton Counties, it also includes a number of mid-sized and smaller rural counties.

Table 6 – Counties Served by Tennessee’s Short-Line Railroads

County	2014		County	2014	
	Population	Rank		Population	Rank
Anderson	75,528	17	Lewis	11,906	83
Bedford	46,627	33	Madison	98,178	14
Carroll	28,370	52	Marion	28,407	51
Cheatham	39,764	39	Maury	85,515	16
Chester	17,379	73	McMinn	52,626	29
Coffee	53,623	26	McNairy	26,267	56
Cumberland	57,985	23	Montgomery	189,961	7
Davidson	668,347	2	Polk	16,730	75
Dickson	50,575	31	Putnam	74,165	18
Dyer	37,935	41	Roane	52,748	27
Fayette	39,011	40	Shelby	938,803	1
Gibson	49,472	32	Smith	19,009	67
Giles	28,853	50	Stewart	13,279	82
Hamilton	351,220	4	Warren	39,969	37
Hardeman	25,965	57	Washington	126,242	11
Henry	32,204	46	Weakley	34,373	43
Hickman	24,384	59	Lake	26,301	55
Knox	448,644	3	Lawrence	125,376	12
Lake	7,631	91	Tennessee Total	6,549,352	
Lawrence	42,274	35	RR Counties Total	4,085,646	62.4%

3.2 TENNESSEE’S SHORT-LINE PROGRAM

Tennessee’s forthcoming *Statewide Rail Plan (SRP)* fully describes both the histories and structures of the various state programs aimed at sustaining and improving passenger and freight rail transportation.²⁰ Because of this resource, our work has the luxury of providing a more stylized focus on the *Tennessee Shortline Railroad Bridge and Track Rehabilitation Program*, the state-level program that pertains specifically to short-line railroad infrastructure and performance, hereafter referred to as simply, “the program.”

Tennessee’s short-line program emerged as a response to the flood of Class I branch-line abandonments that occurred in the wake of Staggers. Originally conducted as separate bridge and track programs, these programs were ultimately combined basic elements of the current program are described below.²¹

²⁰ *Tennessee Statewide Rail Plan*.

²¹ For a further description of the Tennessee (and other) state program see the American Association of State Highway and Transportation Officials (AASHTO). Portions of the text presented here are directly

PROGRAM STRUCTURE AND ELIGIBILITY

Public rail authorities, as established by the state, are the only recipients eligible to apply for and receive annual program funds.²² In doing so, these rail authorities agree to administer funds and manage corresponding projects. Allocations are annual and each contract has a three year performance period. In years past, allocated funds that have not been contracted are held in reserve for each authority.

PROJECT ELIGIBILITY

As suggested by the program title, funding is intended for infrastructure preservation and improvements. Funding is not available for locomotives, rolling stock, or ongoing operations. However, funds may be for used existing infrastructure (versus new construction) and may be used in support of either passenger or freight (or combined) infrastructure.

Examples of past improvements include: surfacing of track, turnouts, switches, yards and sidings; rehabilitation/removal of grade crossings; installation/relocation/ removal of switches; brush cutting or clearing right of way; removal of sidings or tracks through highway grade crossings; rail replacement; ditching and/or removal of waste; crosstie replacement; weed control; signal installation, maintenance or modification; replacement of ballast, sub-ballast & cribbing track; bridge and structure improvements or replacement; culvert cleaning, repair or replacement.

ANNUAL FUNDING AND PROJECT SELECTIONS

Prior to 2013, Tennessee's short-line program was funded at as much as \$15 million annually through rail-related, fuel tax revenues paid to the state's *Transportation Equity Fund* (TEF). However, based on provisions contained in the federal law, the Class I carriers have challenged this method of taxation. Accordingly, program funding has been suspended until the legality of the contested collections is resolved.

Prior to the program's suspension, annual revenues were distributed based on the assessed physical condition of each property, but without regard to the resulting relative benefits to the shipping community or the general public. The advantage of this pattern of distribution is its simplicity. However, from an economic standpoint, the methodology ignores the basic principles of welfare maximization. A more rational methodology would weigh the incremental costs of proposed improvements against the incremental benefits accruing in the form of reduced shipper expenditures over a relevant time horizon or external benefits accruing to residents in the communities served by the subject short-lines. This methodology is well developed and routinely used in federal infrastructure valuations. It is also increasingly observed in the state rail programs of other states.

attributable to AASHTO's descriptions.

<http://rail.transportation.org/Documents/shortlinefinancing/TN%20SLR%20Financing%20Program%20Profile.pdf>

²² Rail authorities are legislatively established. Currently, there is no annual requirement that these authorities report annual activities. Rail authorities are statutorily required to be audited annually.

MATCHING FUNDS

Local sponsors are required to provide a share of cost of grant-funded improvements. Construction grants are funds at 90 percent state and 10 percent local or non-state shares. Historically, in-kind contributions have been permitted as local match.

3.3 A COMPARISON OF OTHER STATE RAIL PROGRAMS

A forthcoming Transportation Research Board publication contains an extensive description of state-level rail programs for all 50 states. A subset of that information is summarized here in Table 7. These data include Tennessee and 29 other states that have rail programs directly applicable to short-line railroads.²³

Of the roughly 30 states included, 28 have short-line-applicable programs that can only be used in support of capital expenditures. There is, however, some variation in whether resources can only be used to rehabilitate or improve existing facilities or whether these resources can also be used to expand network extent. From an eligibility standpoint, roughly two-thirds of the programs allow independent shippers or sub-state jurisdictions (such as Tennessee's rail authorities) to serve as program recipients and, somewhat surprisingly, more than one-quarter (27 percent) of the programs do not exclude Class I railroads from applying for program support.²⁴ Of the freight-applicable programs, 77 percent can also be used to support passenger rail projects.

Of this subset of state rail programs for which short-line freight carriers qualify, roughly two-thirds provide funding through grants; two-thirds provide loans through revolving infrastructure funds or offer guarantees; and 31 percent have programs that extend both forms of financial support. Most grant programs simply require non-state matching funds from participants. Generally, the matching shares range between 10 and 25 percent. However, a significant portion of the states represented in Table 7 (27 percent) require that participants provide a match of between 50 and 100 percent.

Three additional results of the cross-state comparison that are not apparent from the summary provided in Table 7 are, nonetheless, worth noting. First, the magnitude of the short-line support extended by the state of Tennessee appears to be greater than evidenced in most other states. This result is particularly true when funding is expressed on a per track-mile basis. Second, as noted above, many other (though certainly not all) state programs now base distributions on the results of formal benefit-cost estimations. Finally, Tennessee appears to require less reporting from the rail authorities who are the actual funding recipients than is required by other states even though the funding levels are measurably greater.

²³ This table excludes information for California, Florida and Texas and those states that do not have ongoing programs that are clearly available to Class III freight railroads. In making this judgment, we excluded grade-crossing improvement programs from consideration.

²⁴ We do not have information that would indicate whether or not Class I railroads have successfully applied for program support.

Table 7 – Indicators for State-Level Short-Line Programs

State	Class III Only	Class I Allowed	Shipper Other	Grants	Loans	Tax Credit	>50% Match	Freight Only
Arkansas								
Delaware								
Florida								
Georgia								
Idaho								
Illinois								
Indiana								
Iowa								
Kansas								
Maine								
Maryland								
Massachusetts								
Michigan								
Minnesota								
Mississippi								
Missouri								
Montana								
New Hampshire								
New Jersey								
New York								
North Carolina								
North Dakota								
Ohio								
Oklahoma								
Oregon								
Pennsylvania								
South Dakota								
Tennessee								
Virginia								
Wisconsin								

FOUR

PERSPECTIVES ON STATE SHORT-LINE PROGRAMS

Policy-makers and state-level transportation administrators are intimately familiar with the institutional settings in which state policies are developed and executed, but rarely have firsthand experience with railroad management or operations. Similarly, the opportunities and constraints found in state government are a mystery to most railroaders. Thus, we suspected short-line managers and short-line program administrators might have differing views on what is desirable in and achievable by state short-line programs. To explore this question, the UT/UM study team contracted with Global Transportation Consultancy (Madison, Wisconsin) to survey both short-line operators and short-line program administrators across the United States. The remainder of this section reports the results of this work.

4.1 METHODOLOGY

To determine what assistance the railroads now receive from the states they serve and what programs or funding they might wish for, a detailed survey questionnaire was developed, seeking a wide range of information about each short-line property and how various types of assistance are administered. Surveys were sent to railroads as small as 16 miles and to major portfolio (holding) companies that own, lease or operate a number of individual rail properties. The companies invited to respond were assured total confidentiality, both as to their identity and the identity of the state (or states) where they operate.

The survey was divided into two parts: the first part includes 14 multiple choice questions regarding the carrier's interaction with the states. In addition to questions regarding state programs, the survey also included several questions that explore federal funding through various US DOT, Federal Railroad Administration, and TIGER grant programs administered by US DOT. Response choices ranged from two to five answers and multiple responses were allowed where appropriate. The second portion of the survey considers 24 specific types of aid or support programs currently available in their state (or states) *and* what programs their state might consider sponsoring; as well as what programs they *wished* their state would provide.

Of the short-line railroads contacted, 100 percent returned completed surveys. Moreover, some respondents went beyond what was asked of by offering interesting comments on issues falling outside the scope of the survey questions.

4.2 SHORT-LINE SURVEY RESULTS

Short-line respondent results are presented in two parts. The first of these describes respondents' general impressions and opinions. This is followed by a table that summarizes the respondents' abilities to fund specific expenditure under existing programs. These specific expenditures were the result of a "wish-list" compiled by Global Transportation Consultancy.

GENERAL RESULTS

As is natural, the survey results reveal a few minor attempts to manipulate the information gathering process in order to gain a specific outcome. Still there was remarkably little of this. Instead, most answers disclose a desire to provide unfiltered information.

FINANCE, ADMINISTRATION, AND PROJECT SELECTION Perhaps more than anything, respondents voiced a desire for more information and certainty regarding the expectations, extent, and availability of future state-sponsored short-line programs. This was accompanied by a wish to learn about short-line programs available to other carriers in other states. Several respondents also expressed a need for technical assistance in the preparation of applications aimed at both state and federally sponsored opportunities.

In terms of financial instruments, there was a consensus that indirect loan guarantees provide few opportunities when compared to direct loans (revolving fund) or project grants. There is a general perception that grants are most likely when a proposed short-line improvement is coupled with a broader economic development initiative and that grants are more easily obtained when the carrier brings significant matching funds even when matching funds are not a formal part of the stated evaluation criteria.

Somewhat surprisingly, the survey respondents expressed a desire for more (rather than less) use of benefit-cost analysis (BCA) in the project selection process. As reported, these short-lines are currently required to provide a BCA in 70 percent of the states where they apply for support and they are suspicious of programs that do not require this as a part of the project selection process. In states with a less formal process, short-line managers do not understand, how, and by whom project selections are made.

SUPPORT FOR WAY AND STRUCTURES Most state-supported way and structure emphasize track and bridge rehabilitation or upgrades to meet the current car weight standard of 286,000 pounds per total car weight and/or to correct past deferred maintenance. Many short-lines still have rail weight, tie, or bridge conditions that will not allow movement of these heavier cars. The respondents seem to feel this emphasis on "286 compatibility" is well placed and suggest it has resulted in the survival of many short-lines.

LOCOMOTIVES AND FREIGHT CARS With regard to locomotives, respondents point toward a bifurcated state approach. Historically, short-lines have operated with older locomotives either obtained in conjunction with the short-line acquisition or through secondary, used locomotive markets. In the case of these older locomotives, the survey respondents suggest there is virtually no state-level support for maintenance or rehabilitation. Alternatively, most states are

aggressively supporting the acquisition of new (or fully) rebuilt locomotives that meet forward-looking environmental standards.

Short-lines typically do not own large freight car fleets, but instead depend on Class I connections to supply needed freight cars. This is a perennial source of friction between the Class I and Class III railroads. Nonetheless, the short-line survey respondents did not indicate a single case in which state support is available to lease or purchase rolling stock.

POSITIVE TRAIN CONTROL Based on current criteria, most, but not all, smaller railroads surveyed are exempt from the requirement to install PTC. Only two respondents host Amtrak passenger trains and a similarly small number handle sufficient volumes of TIH materials (Toxic Inhalant Hazard) to require PTC installation. Nonetheless, PTC is still a concern. Short-lines that operate over Class I PTC equipped lines (for example, to reach an interchange point) must equip their locomotives so that they are PTC compliant. To our knowledge, no state has acted to assist their smaller freight-only railroads with PTC, either for ground and communications links or onboard locomotive equipment. Some states have invested heavily to assist commuter rail carriers with PTC installation.

FEDERAL SUPPORT AVAILABLE TO SHORTLINES While the survey focused on the relationships between short-line operators and state-level program administrators, it did allow short-line operators to voice views regarding federal programs and their administration. Based on the response, most feel that freight rail in general and short-lines in particular have received very little funding from the past six rounds of TIGER grants. Instead, they assert that highway and various types of non-rail transit have been the prime beneficiaries of TIGER funding. Regarding the stand-alone US DOT and Federal Railroad Administration grant and loan programs, the respondents suggest that loans to smaller railroads have never been used these to the level anticipated due to onerous compliance terms and relatively high interest rates.

TABULAR RESULTS

In addition to questions for which answers are summarized above, respondents were asked to consider a variety of activities and indicate whether or not the state (or states) in which they operate provides ongoing program support. In some cases, these results reflect considerable uncertainty. Results are reported in Table 8.

4.3 SHORT-LINE PROGRAM ADMINISTRATORS

In order to measure the effectiveness of communications between short-line program administrators and short-line managers and to supplement the information provided in Section 3, surveys identical to those completed by short-line managers were submitted to various state DOTs. Fully 100 percent of the states contacted returned completed surveys.

All states report that their programs are subject to legislative approval, which sometimes results in less freight rail funding during difficult economic times. Freight rail assistance is available in a most states, but the amounts differ greatly. The percentage of “local match” requirements also differs.

Table 8 – Survey Results: Carrier Assessment of State-Level Funding Availability

PROJECT TYPES	Grants Available	Loans Available	State <u>might</u> consider this type of project
TRACK REHAB: main line rail, ties, surfacing, etc	54%	27%	
BRIDGE REHAB: repairs, upgrade to 286k, etc	50%	20%	
Interchange, passing, storage or yard tracks	40%	25%	
LOCOMOTIVE: rehab or upgrade (EPA, Dash 3, etc)			
NEW LOCOMOTIVE ACQUISITION (gen-set, etc)	16%		
ROLLING STOCK REHAB: existing equipment			
ROLLING STOCK ACQUISITION: new equipment			25%
MofW MACHINES: rehab, upgrade, acquire new			
GRADE CROSSING WARNING SYSTEMS	80%	20%	
TRAIN CONTROL: dispatching, signals, PTC, etc			
INDUSTRIAL DEVELOPMENT	50%	40%	10%
INDUSTRIAL FACILITIES: rail user, new or expanded	50%	40%	10%
LAND ACQUISITION: for railroad or industry use	50%	25%	
ENGR'G STUDIES: track conditions, rehab needs	67%		
ENGR'G STUDIES: bridge conditions - current	60%	20%	
ENGR'G STUDIES: bridge rehab, upgrade, new	40%		
FUND: writing grant/loan applications (TIGER, etc)	20%		
FUND: negotiations with Class I railroads		33%	
FUND: rail general marketing, advertising		50%	
FUND: shop, transload, office, other facilities	38%	24%	
FUND: joint freight, transit, or commuter projects	50%		
FUND: info-tech, legal, other admin costs	25%		
DIRECT SUBSIDY: marginal or money-losing lines			
GUARANTEE LOANS given by banks, other agencies			

Many states fund rail projects through state-issued bonds. This tends to lessen funding uncertainty. Wisconsin, the state that ranks second in annual freight rail project funding, uses bonding exclusively. There, both bond principal and interest is paid by ad valorem property taxes on Class I railroads operating in that state. To date, the Class I railroads have not objected to this practice. Similar to the results reported by the short-line railroads, state program managers also feel that TIGER and other federal funding amounts are quite low.

State program responses regarding the nature of projects will or will not be funded are reported in Table 9. To be fair, some state DOTs are limited by legislative or administrative restrictions on what project types they can fund. Of the 24 project types listed in the state survey, at least some states report that they will not fund 11 of the 24 project types. No state currently funds train control systems, such as PTC, but 100% report that they would consider such funding. All the states advised that they would not fund direct operating subsidies for marginal lines or fund general administrative projects such as information technology.

Table 9 – Survey Results: Actual State Program Funding Availability

PROJECT TYPES	Grants Available	Loans Available	State <u>might</u> consider this type of project	State would <u>not</u> consider
TRACK REHAB: main line rail, ties, surfacing, etc	50%	40%	10%	
BRIDGE REHAB: repairs, upgrade to 286k, etc	50%	40%	10%	
Interchange, passing, storage or yard tracks	50%	50%		
LOCOMOTIVE: rehab or upgrade (EPA, Dash 3, etc)	30%	15%	25%	30%
NEW LOCOMOTIVE ACQUISITION (gen-set, etc)	30%	20%	20%	30%
ROLLING STOCK REHAB: existing equipment	16%	16%	16%	52%
ROLLING STOCK ACQUISITION: new equipment	34%	16%	16%	34%
MofW MACHINES: rehab, upgrade, acquire new	16%	16%		68%
GRADE CROSSING WARNING SYSTEMS	80%	20%		
TRAIN CONTROL: dispatching, signals, PTC, etc			100%	
INDUSTRIAL DEVELOPMENT	56%	44%		
INDUSTRIAL FACILITIES: rail user, new or expanded	50%	50%		
LAND ACQUISITION: for railroad or industry use	44%	44%	12%	
ENGR’G STUDIES: track conditions, rehab needs	60%	20%	20%	
ENGR’G STUDIES: bridge conditions - current	60%	20%	20%	
ENGR’G STUDIES: bridge rehab, upgrade, new	60%	20%	20%	
FUND: writing grant/loan applications (TIGER, etc)	25%		50%	25%
FUND: negotiations with Class I railroads			25%	75%
FUND: rail general marketing, advertising			25%	75%
FUND: shop, transload, office, other facilities	52%	32%	16%	
FUND: joint freight, transit, or commuter projects	42%	29%	29%	
FUND: info-tech, legal, other admin costs				100%
DIRECT SUBSIDY: marginal or money-losing lines				100%
GUARANTEE LOANS given by banks, other agencies			50%	50%

A comparison of the results reported in Tables 8 and 9 suggests a lack of effective communication between short-line program administrators. In nearly every category, program administrators indicated a greater willingness to fund the subject activity or, at least, to consider doing so. The only category where operator information appears completely reliable involves highway grade crossing warning systems. At the end of the communication scale, short-line operators indicated an almost complete lack of available support for equipment improvements other than environmentally compliant locomotives. Program administrators, on the other hand, suggest that funding is available for variety of locomotive and freight car improvements.

FIVE

FUNDING STATE-LEVEL SHORT-LINE PROGRAMS

Regardless of how one views short-line railroad programs, generating the stable, predictable flow of supporting revenue is a perennial challenge. To the extent that a state chooses to fund rail programs through general funds, short-lines must compete with myriad other funding demands. Alternatively, a state looking for a dedicated source of short-line funds, faces a limited number choices where both the structures and capacities of available revenue instruments can be quite limited.

In Tennessee, for a period of roughly 25 years, the state's short-line programs were supported by sales tax revenues derived from railroad purchases of diesel fuel. However, the legality of the supporting tax instrument has been challenged by Class I carriers and remains in litigation. In a 2014 response, Tennessee modified its fuel tax structure, but that modified structure has also become the subject of litigation. As a consequence, all distribution of funds has been halted. Unless and until the funding issue is resolved, the state's short-line railroad program will remain inactive.

5.1 SHORT-LINE PROGRAM FUNDING IN TENNESSEE

Between 1988 and 2013, Tennessee's short-line railroad programs were funded through the state's *Transportation Equity Fund* (TEF) which also supports commercial navigation and aviation activities. Historically, the TEF derived all revenues through a seven percent sales tax levied against the off-road fuel purchases of railroads, water carriers, and commercial aviation providers. In Tennessee, motor carriers do not incur a sales tax on diesel purchased for on-road use, but instead face a 17 cent per gallon excise tax. Also, resulting Motor Fuel tax revenues do not accrue to the TEF, but instead (mostly) are deposited in the state's highway fund.

The basis of the legal challenges to Tennessee's tax policies lies in the 1976 *Railroad Revitalization and Regulatory Act* which, among other things, prohibits jurisdictions from "imposing a . . . tax that discriminates against a rail carrier providing transportation subject to the jurisdiction of the [Surface Transportation] Board under this part."²⁵

In the case of Tennessee's policy, the alleged discrimination rested on the potential difference between the effective sales tax rate levied against railroad fuel purchases and as similarly calculated rate for the excise tax levied against fuel purchased by motor carriers. Specifically, when fuel prices are relatively high (above \$2.44 per gallon), the effective per-gallon tax paid by

²⁵ *Railroad Revitalization and Regulatory Reform Act of 1976* § 306(1)(d).

railroads is greater than the 17 cents per gallon paid by motor carriers. The course of the original legal activity has, so far, included at least six separate suits, extended over a period of eight years, and resulted in two related appearances before the U.S. Supreme Court.²⁶ At least initially, Tennessee continued to collect TEF revenues and distribute funds for the purpose of short-line rehabilitation and improvement. However, by 2013, the course of legal events caused TDOT to halt further distributions.

In May of 2014, the Tennessee Legislature passed and Governor Haslam signed, the *Transportation Fuel Equity Act* with the aim of remedying the tax issue underlying the existing litigation.²⁷ This legislation effectively exempts Tennessee's railroads from further fuel-related sales tax obligations and replaces those obligations with a 17 cents per gallon excise charge identical to the tax paid by motor carrier on on-road diesel purchases. However, as ultimately amended, the changes contained in the statute do not apply to commercial navigation. Instead, the legislation specifically states:

"Means of transportation" means any vehicle or other device employed by a commercial carrier for the purpose of transporting passengers or goods for a fee, including, but not limited to, motor vehicles, trains, and aircraft; provided, that "means of transportation" does not include any marine vessels, boats, barges, or other craft operated on waterways.

Based on this distinction, the Class I railroads contend that Tennessee's freight-related fuel tax policies continue to discriminate against railroads and are, therefore, prohibited under federal law. Indeed, the passage of the *Transportation Fuel Equity Act* has led to a new round of additional litigation.²⁸

Overall, the TEF-related litigation has implications that extend well beyond lost support for Tennessee's short-line program. Most states (45) impose a sales and use tax and nearly all of those (42) wholly or partially exempt the purchase of on-road diesel, in favor of excise-based motor carrier fuel taxes. If the current court rulings stand, no state will be able to safely apply differing mixes of tax instruments to the various freight modes. Thus, the funding disruption suffered by Tennessee's short-line program might be viewed as collateral damage in a much larger battle over the permissible forms of railroad taxation under current federal law.

5.2 FEDERAL SHORT-LINE FUNDING AND POLICIES

Both the short-line operator survey results described in Section 4 and broader anecdotal information suggest that, with modest exception, federal programs provide little meaningful support to short-line freight railroads. The descriptions of these federal programs provided here

²⁶ For a summary of early legal activity see Povich (2014).

²⁷ As codified, see, 2014 Tennessee Code, Title 67 - Taxes And Licenses, Chapter 3 - Petroleum Products and Alternative Fuels Tax Law, Part 14.

²⁸ See BNSF, *et al v. Tennessee Department of Revenue*, United States District Court for the Middle District of Tennessee at Nashville. Nos. 3:14-cv-01399; 3:14-cv-01400; 3:14-cv-01401; 3:14-cv-01472; 14-cv-0195.

are, by no means, comprehensive and do not include federal programs that are exclusively focused on rail-related safety.

LOCAL RAIL FREIGHT ASSISTANCE (INACTIVE GRANT PROGRAM)

The Local Rail Service Assistance (LRSA) Program was established by the Regional Rail Reorganization Act of 1973 to provide financial support to states for the continuation of rail freight service on abandoned light density lines in the Northeast. The Railroad Revitalization and Regulatory Reform Act of 1976 expanded the program to all states. The program was further expanded and amended in 1978 to allow capital assistance for rehabilitation prior to, rather than after, abandonment. Amendments in 1981 prohibited the use of these funds for operating subsidies. The program was reauthorized in 1989 and renamed the Local Rail Freight Assistance (LRFA) Program.²⁹ In 1996, legislation was introduced into the U.S. House of Representatives to abolish this program (H.R.2216). However, no action appears to have been taken, so that this program, while inactive, is still in place.

RAILROAD REHABILITATION AND IMPROVEMENT FINANCING (RRIF: ACTIVE LOAN PROGRAM)

The RRIF program was established by the Transportation Equity Act for the 21st Century (TEA-21) and amended by the Safe Accountable, Flexible and Efficient Transportation Equity Act: a Legacy for Users (SAFETEA-LU). Under this program the FRA Administrator is authorized to provide direct loans and loan guarantees up to \$35.0 billion to finance development of railroad infrastructure. Up to \$7.0 billion is reserved for projects benefiting freight railroads other than Class I carriers.

The funding may be used to:

- Acquire, improve, or rehabilitate intermodal or rail equipment or facilities, including track, components of track, bridges, yards, buildings and shops;
- Refinance outstanding debt incurred for the purposes listed above; and
- Develop or establish new intermodal or railroad facilities

Direct loans can fund up to 100% of a railroad project with repayment periods of up to 35 years and interest rates equal to the cost of borrowing to the government.

Eligible borrowers include railroads, state and local governments, government-sponsored authorities and corporations, joint ventures that include at least one railroad, and limited option freight shippers who intend to construct a new rail connection.³⁰

A 2015 Congressional Research Service report describing the RRIF program's use emphasizes that unlike the Department of Transportation's other prominent loan assistance program, the Transportation Infrastructure Finance and Innovation Act (TIFIA) program (see below), RRIF loan recipients are required to deposit the equivalent of a bond, referred to as a credit risk

²⁹ Text is drawn directly from the FRA. See, www.fra.dot.gov/Page/P0225

³⁰ Text is drawn directly from the FRA. See, www.fra.dot.gov/Page/P0128

premium, which is intended to offset the risk of a default on their loan. The money is returned to the borrower when the loan is paid back. This program attribute, combined with the complexity and uncertain duration of the application process, has discouraged short-lines' use of this program.³¹ Indeed, as of 2015, less than one-third of the \$2.7 billion in RRIF loan approvals were for freight-oriented projects. The balance has been for passenger projects that typically have included a large, public-sector participant.³²

TRANSPORTATION INFRASTRUCTURE FINANCE AND INNOVATION ACT (TIFIA: ACTIVE LOAN PROGRAM)

The TIFIA program's primary objective is to encourage public-private infrastructure endeavor and, thereby, fill existing funding gaps, while limiting federal exposure. The program imposes minimum project threshold amounts of \$10 million for transit projects, \$15 million for intelligent transportation systems (ITS), and \$50 million for all other eligible projects which include a variety of areas applicable to short-line creation, rehabilitation, and improvements.

Like the RIFF program, TIFIA imposes a number of non-trivial responsibilities on applicants. TIFIA credit assistance is limited to 33 percent of total project costs; TIFIA loan must receive investment grade ratings from at least two nationally recognized credit rating agencies; applicants must demonstrate the availability of a dedicated repayment revenue stream; and again, like the RRIF program, TIFIA-sponsored projects must meet NEPA and "Buy American" standards.³³

TRANSPORTATION INVESTMENT GENERATING ECONOMIC RECOVERY (NON-RECURRING GRANT PROGRAM)

As the program name suggests, the TIGER grant program was initially designed as a federal response to the economic recession of 2007-2009. Since its inception in 2009, TIGER, now in its eighth round, has provided nearly \$4.6 billion to 381 projects in all 50 states. At least a small number of these grants have been for short-line railroads or projects with a significant short-line component, including the Cates Landing initiative in upper West Tennessee.³⁴ Like the loan-based TIFIA program, TIGER grants seek to leverage private sector funding and, according to

³¹ This text relies heavily on CRS text. See CRS (2015). Also as the CRS report (p. 12) highlights, "There are other costs to participation in the RRIF program that are harder to measure. For example, to qualify for a loan, an applicant must comply with requirements of the National Environmental Policy Act (NEPA) and a "Buy America" requirement. NEPA requires that FRA review a project's environmental impact. The Buy America Act requires that a project receiving a government loan use steel, iron, and other manufactured goods produced in the United States, unless the project sponsor receives a waiver from FRA."

³² CRS (2015, p. 13.)

³³ See <https://www.transportation.gov/tifia/tifia-credit-program-overview>

³⁴ Cates Landing is not the only Tennessee rail-related project to have received TIGER support. In the initial round of TIGER funding, the largest single recipient was a five state consortium, including, Tennessee, that was partnered with Norfolk Southern in the development of the latter's Crescent Corridor. This award included funds used to develop the truck-rail intermodal facility in Fayette County, Tennessee.

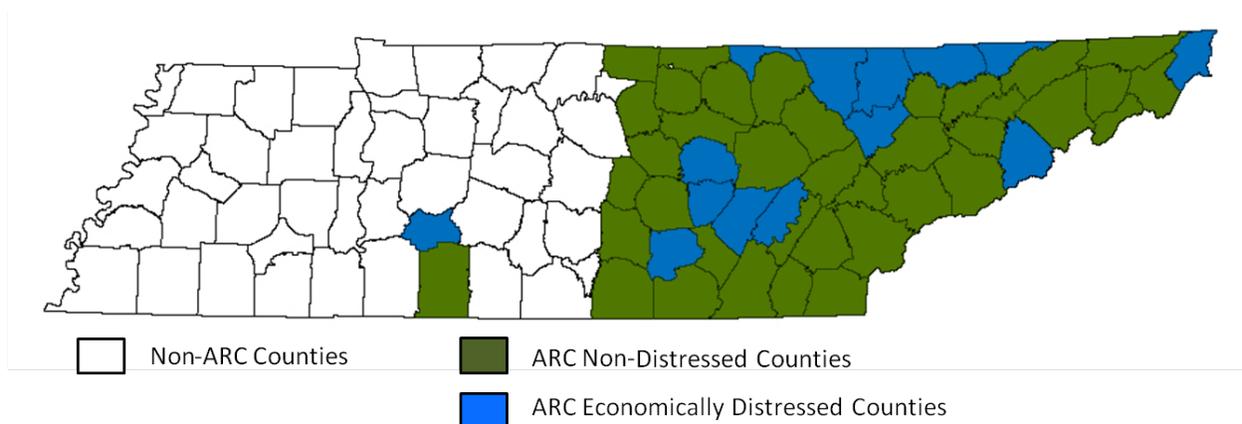
USDOT information, The 2015 TIGER round alone is leveraging \$500 million in federal investment to support \$1.4 billion in overall transportation investments.³⁵

While particularly popular, the TIGER program is extremely competitive, with an application success rate of 2.9 percent. Indeed, experience suggests that virtually no TIGER applications succeed as a result of their initial submission. The application process includes the formal development of a benefit-cost analysis based on USDOT methods and standards. In this way, the TIGER program has become a test ground for the development of BCA criteria that are now applied more broadly throughout both federal and state grant programs. There is no dedicated source of TIGER program funding, nor any guarantee of subsequent grant rounds.

APPALACHIAN REGIONAL COMMISSION (ARC: RECURRING AND NON-RECURRING GRANTS)

More than half (52 of 95) of Tennessee’s counties lie within the federally-defined Appalachian region and are, therefore, eligible for funding under program sponsored through the Appalachian Regional Commission (ARC). Further, 15 of these counties are currently classified by the ARC as economically distressed. Both distressed and non-distressed counties are depicted in Figure 4.

Figure 4 – ARC Counties in Tennessee



Currently, ARC operates two grant programs that could potentially serve as resources for Tennessee’s short-line railroads. The first of these is the Commission’s *Industrial Access* program. Grants under this program are recurring and may be used to develop any modal infrastructure that connects a potential industrial location to the greater transportation network. The second (non-recurring) grant program is ARC’s ongoing *Power* initiative. Grant funds under this program are intended to offer economic relief to ARC areas that are currently suffering economic consequences associated with the national trend of reduced coal consumption.

³⁵ See <https://www.transportation.gov/tiger>

5.3 SHORT-LINE PROGRAM FUNDING IN OTHER STATES

Table 10 summarizes the funding methods and magnitudes evidenced in other states. While this table is valuable, it should be used with caution. Its simplicity and ease of interpretation mask a number of data issues that required considerable professional judgment on the part of the study team. For example, while every effort was made to segregate passenger spending from expenditures on freight programs, this can rarely be done precisely. Also, we would expect differing expenditures in states that actually own short-line segments. Thus, the comparability of the freight short-line spending values in the first column is suspect. These issues notwithstanding, even a loose interpretation of the data suggest that Tennessee's history of short-line spending places it among the more supportive states.

The column denoting a sales tax levy against railroad fuel purchases also requires explanation. Of the states with ongoing programs, two – Alabama and Tennessee – indicate the direct use of sales tax revenues in support of short-lines. Thus, while Florida, Maine, Massachusetts, and Oklahoma impose a sales tax on railroad fuel purchases, we are left to assume that the resulting revenues are used for other purposes. In fact the Pew study cited above (Povich, 2014) suggests that ten states impose a full or partial sales tax on railroad fuels. However, based on our analysis, four of these states – Arizona, New Mexico, Rhode Island and West Virginia – have no ongoing short-line programs at all. Interestingly, of the states analyzed, Wisconsin is the only state to dedicate a portion of property tax collections to short-line support.

If there is any discernible pattern of state-level funding, it is that many states seem to provide support of between \$1 million and \$5 million annually and simply fund these expenditures from general revenues. In many of these states, general revenues are used to maintain and supplement revolving infrastructure loan funds. Like many federal programs, these revolving funds use public money to leverage additional private sector resources. Nearly every state with annual expenditures greater than \$5 million has a dedicated method of generating revenue. As noted, in Wisconsin, the funding source is railroad property tax revenues. Florida funds freight rail improvements from the proceeds of a statewide stamp tax. Oregon uses lottery revenues to support bond issues and Virginia uses revenues from an automobile rental tax for the same purpose.

Table 10 includes two additional findings of interest. First, nearly a third of the states represented in the data own significant portions of the freight short-line mileage in their respective states. In Tennessee, the municipalities or county coalitions that have established railroad authorities, sometimes own short-lines, but the state of Tennessee owns none.

Finally, six states (roughly 20 percent) suggest that their short-line programs are self-sustaining. In all but one case, these states operate revolving loan funds as their primary means of carrier support. In four of the five such cases, state legislatures provided the initial capital funding. Colorado was able to capitalize its revolving loan program with federally obtained dollars. The remaining state claiming program self-sufficiency is Oklahoma, where state-owned short-lines are intended to generate lease incomes sufficient for the state to recover its initial purchase outlays and to pay for upkeep and improvements. We would emphasize that in all six cases, it was not possible to confirm the purported self-sufficiency.

Table 10 – A Comparison of State-Level Short-Line Funding Practices

State	Annual Short-Line Funding Total	Fuel-Based Sales Tax	Other RR Taxes	Other Non-RR Taxes	General Funds	Bond Sales	State Ownership	Self Sustained
Alabama	\$0							
Arkansas	N/A							
Colorado	N/A							
Delaware	< \$0.5M							
Florida	\$18-\$22M							
Georgia	N/A							
Idaho	\$5 M							
Illinois	\$6 M							
Indiana	\$2 M							
Iowa	\$3 M							
Kansas	\$5 M							
Maine	\$2 M							
Maryland	N/A							
Massachusetts	\$3 M							
Michigan	\$3 M							
Minnesota	\$1.5 M							
Mississippi	\$1.5 M							
Missouri	\$1 M							
Montana	\$0.5 M							
New Hampshire	\$0.5 M							
New Jersey	LARGE							
New York	\$30-\$50 M							
North Carolina	N/A							
North Dakota	\$2 M							
Ohio	\$7 M							
Oklahoma	N/A							
Oregon	LARGE							
Pennsylvania	\$30-\$50 M							
South Dakota	\$7 M							
Tennessee	\$10-\$15 M							
Virginia	LARGE							
Wisconsin	\$5 M							

5.4 TENNESSEE SHORT-LINE PROGRAM FUNDING GOING FORWARD

Based on the comparison information compiled in the preparation of this report, the study team has reached several conclusions with respect to funding. We first enumerate these then provide additional discussion. Our judgments include:

- When compared to other states, the funding afforded by the *Transportation Equity Fund* has allowed Tennessee to aggressively support the rehabilitation and improvement of the state's short-line railroads.
- It is probably impossible to sustain recently-observed funding levels through an annual appropriation of general funds, so that, if the rail portion of the TEF is to be restored, a dedicated funding source is needed.
- If Tennessee wishes its funding activities to be consistent with practices in other states, awards should be made more competitive either through the imposition of benefit-cost standards or requirements for matching funds.
- Federal funding for the rehabilitation and improvement of short-lines is unlikely to fill any breach in the availability of state-level short-line funds.
- In any case, immediately resolving the current funding dilemma in a way that provides certainty and stability to the state's short-line railroads and their customers is important.

For two and a half decades, Tennessee provided significant funding for its short-line railroads based on the flow Class I railroad fuel-related sales tax payments into the state's *Transportation Equity Fund*. Today, however, unless the state of Tennessee is willing to acquiesce to the railroads' interpretation of the state fiscal policies allowed under the federal 4R Act, it seems unlikely that this traditional practice will be allowed to resume within the foreseeable future. Thus, if policy-makers wish to soon restore the *Tennessee Shortline Railroad Bridge and Track Rehabilitation Program*, doing so will require an alternative source of program funds that does not rely on railroad fuel purchases as a basis for future rail-related TEF revenues.

Based on the experiences observed in other states, there seem to be two courses available. If the state wishes to immediately reestablish program funding at traditional levels and under traditional program guidelines, it can decouple revenue development from use and, like Oregon, Virginia, or Florida, identify a rail program funding source based purely on that source's ability to generate the needed short-line program funding. The second available path would replace the traditional levels of ongoing, direct state support with a state-seeded and state maintained revolving loan fund.³⁶ Even if general funds are initially needed to capitalize this fund, the repayment of these seed funds could be incorporated into the revolving fund's long-term structure.

³⁶ It would, of course, be possible to fully restore the short-line program to traditional funding levels by diverting rail-related property tax payments (the Wisconsin model) or funding the program through general funds. Unfortunately, either of these courses would require a corresponding reduction in current expenditures elsewhere. For this reason, we have judged them as untenable.

Decoupling program funding from any relationship to program use is antithetical to Tennessee's policy traditions. At the same time, replacing the current program structure with a revolving loan fund would place significant new burdens on the state's short-line railroads and inevitably alter the magnitudes and locations of short-line investments. Thus, neither course is ideal. Nonetheless, *either* course is probably better than continued inaction.

Shippers must make investments too. Short-line customers must continuously invest in industry tracks, unloading facilities, and other supply-chain-related systems. The current uncertainty surrounding the future availability of short-line rail carriage *has to* dampen shippers' willingness to make these rail-dependent investments. This scenario is not sustainable. At some point, short-line customers will switch to a less efficient mode of freight transport or to forego freight shipments altogether. Moreover, the long lives of most freight-related assets suggest that any shipper decisions to abandon the use of rail service will not be reversed under any circumstance.

SIX

SUMMARY AND CONCLUSIONS

Seemingly endless consolidations among the nation's Class I rail railroads have led to an environment where the seven remaining large carriers look and act very similar to one another. They engage in similar strategies, suffer similar vulnerabilities, and advocate similar national transportation policies.

This homogeneity is completely lost in the world of short-line railroads. For the most part, short-lines emerge and survive or disappear based on very specific needs, opportunities, and challenges. Further, the characteristics of these "little" railroads are as varied as the geographic, economic, and political peculiarities that give rise to their creation.

This diversity has three closely related implications. First, short-lines are often critical to specific communities or to the realization of specific economic opportunities. Second, these railroads are invariably more financially fragile than their Class I counterparts. Finally, given their diverse characteristics, there is no uniformly appropriate, single path for successful public sector short-line support.

Within this somewhat cluttered context, Tennessee fostered a successful environment for short-line railroads to develop and operate. Moreover, this policy success is, at least, loosely associated with some large-scale economic wins for Tennessee communities. Thus, it is easy to conclude that the state's efforts have been worthwhile and easy to imagine that these programs would have continued unchanged had that been possible. Unfortunately, maintaining the status quo is not possible. The now three-year-old disruption in short-line program funding has forced change. All that can be decided, now, is the direction that change will take.

With all this in mind, we offer the following conclusions and recommendations

- **Doing nothing is doing something.** From a practical standpoint, a failure to repair or replace the current short-line support program is equivalent to an overt decision to discontinue it.
- **Policy-makers must decide whether to continue traditional levels of program funding or opt for a revised program format that can be sustained with fewer resources provided through transportation funds marked for freight mobility or general revenues.** Resolving funding issues, and doing so soon, is at the center of future state policy.
- **While current circumstances impose urgency, they also provide an opportunity to improve Tennessee's short-line program.** As necessary fixes are made, the resulting new program can incorporate experiences gained by other states and also better reflect forward-looking freight transportation conditions and needs in Tennessee.

- The GIS platform provided here is a useful step in integrating short-line availability and improvements into broader economic development activities. This should be followed by additional collaborative efforts between Tennessee's Department of Transportation and the Department of Economic and Community Development to ensure that the state's short-line railroads provide the greatest possible benefits to state residents.
- One of the key lessons learned from other states is that increased scrutiny of candidate short-line improvements can reduce the magnitude of necessary state support. It is also useful in helping to integrate short-line availability into broader economic development strategies. This scrutiny can be achieved through the internal imposition of benefit-cost standards and/or through the requirement of meaningful external matching funds.
- Ensuring and improving safety outcomes are essential elements in every public sector transportation activity. This is certainly true in the case of short-line oversight and support. Accordingly, both the monitoring of and state support for safety-related activities should be carefully segregated from activities designed to sustain and enhance the economic value of Tennessee's short-line railroads.

Tennessee policy-makers have created and sustained a freight transportation environment that is rich in its quality, variety, extent. This environment and the freight mobility it affords are remarkable assets in the state's continued pursuit of prosperity. Not by accident, the state's current set of freight resources includes a variety of short-line railroads. Some version or variant of the program outlined above is necessary to preserve this freight capacity.

APPENDIX

GIS METHODS AND PRODUCTS

As a rule, short-line railroads have geographic, commercial, and political characteristics that make each one unique. Moreover, apart from their operators, current freight customers, and Class I connections, smaller railroads are usually not well-known, even in the communities they serve. Unfortunately, their eclectic and somewhat obscure nature also makes it difficult for practitioners to oversee state-level short-line program and to integrate short-line-related opportunities into broader economic development initiatives. As a key step to remedying this information shortfall, the study team was tasked with developing a GIS-based platform that can serve as a lasting foundation for short-line data development.

6.1 GIS METHODOLOGY

Developing the prescribed GIS framework involved three distinct steps. These are enumerated then further discussed in the text that follows. Process steps included:

- Developing an accurate track centerline coverage of Tennessee's short-line railroads, including both active and inactive track segments;
- Appending all bridge, drainage, and roadway grade crossing locations and attributes to the centerline coverages; and
- Establishing a useable linear referencing system for each short-line based on the actual locations of railroad mileposts.

SHORT-LINE CENTERLINE COVERAGES

For each short-line, the track centerlines have been rendered at 1:1500 scale allowing for the accuracy needed to depict sidings and yard tracks. The centerline datasets were developed to provide a comprehensive foundation for future network analysis. Attribute data include track owner(s), railroad authority, railroad name, railroad segment length in feet, the name of the town or city where the track starts and ends, and the name of any connecting railroad (e.g. Norfolk Southern, CSX, etc.). The Projected Coordinate System used to calculate segment length is NAD 1983 NSRS2007 StatePlane Tennessee FIPS 4100 Ft US.

Coverages include rail route segments currently in use, as well as inactive or out-of-service trackage. However, after considerable discussion with the project's sponsor, the study team elected to exclude route segments that have been formally abandoned.

SHORT-LINE RAILROAD BRIDGES

The condition of short-line railroad bridges and their capacity to accommodate various loads are perennial concerns in every state. Bridge condition has obvious environmental and public safety implications and the weight capacity of these bridges directly impacts the short-lines' commercial value to the communities they serve. It follows that bridge rehabilitation and improvements have been a target of Tennessee's short-line program since its inception. This importance also implies that including accurate bridge locations in the basic GIS framework was essential.

The bridge location data, obtained through the FRA, include the locations of bridges, culverts and any other location where a stream, creek or other water feature intersects with the rail track. Attributes include water feature name, bridge description (when available), and location coordinates. The purpose of the data set is to identify locations where flooding or soil erosion may cause an issue with track safety.

RAILROAD-HIGHWAY GRADE CROSSINGS

Railroad-highway at-grade crossings are a defining element in the interactions between short-line railroads and the communities they serve. Obviously, avoiding collisions between motor vehicles and on-track equipment is of paramount importance. However, ensuring that emergency vehicles and first responders have ready access to properties on or near short-line railroads is also essential. Finally, the locations and characteristics of grade crossings can also help to identify properties that may be candidates for rail-served industrial development.

The grade crossing data, also obtained through the FRA, include at grade crossings between rail and any public (e.g. road, highway, etc.) or non-public (e.g. private access point to farm, etc.) road segment. The crossing attribute data include multiple attributes found in FRA and TDOT grade crossing data files, including but not limited to road name, functional roadway classification, average daily motor vehicle traffic, form of grade crossing warning systems, number of railroad tracks, average number of daily railroad operation, representative train speeds, etc.

RAILROAD MILEPOST LOCATIONS

Class I railroads, individual short-line railroads, the FRA, and other regulatory agencies maintain copious current and historic data describing the configuration, characteristics, and use of railroad tracks and structures. Almost, without exception the locations of these network elements and activities are defined based on railroad mileposts. Thus, establishing the *actual* locations of these mileposts greatly amplifies the usefulness of the GIS framework. Unfortunately, mileposts have been and continue to be arbitrarily placed, so accurately determining the actual locations of mileposts for Tennessee's short-lines proved both difficult and time-consuming.

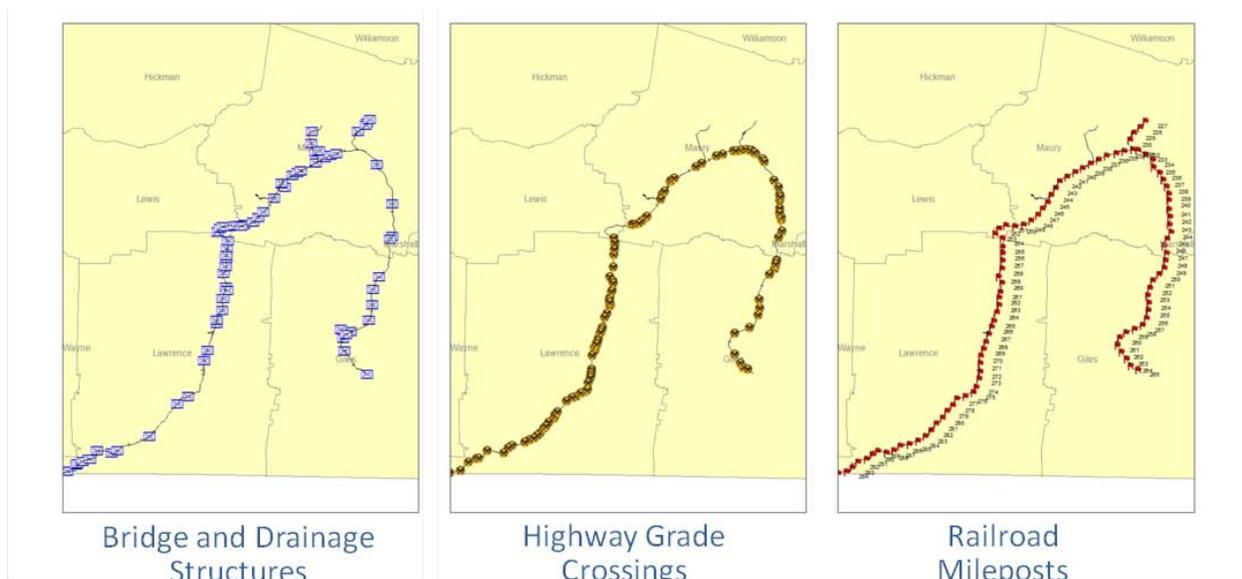
Milepost data were developed from a variety of sources. In a small number of cases, subject short-lines had already collected and were able to provide GIS coordinates corresponding to milepost locations. In some instances, operators collected this data specifically to meet the needs of the current work. Finally, in the remaining cases, the study team was able to establish milepost locations based on drawings, photographs, and the spatial relationship of observed mileposts to other structures for which coordinates were available. Data set attributes include latitude and longitude coordinates, and milepost number.

6.2 THE GIS FRAMEWORK - AN ILLUSTRATION

Full GIS coverages for Tennessee’s short-line railroads are available through TDOT’s Multimodal Division. However, as an illustration, Figure 5 depicts the Tennessee Southern Railway (TSRR) operations in lower Middle Tennessee.

While these visual representations are useful, the true power of this GIS platform lies in its ability to support and correlate data from various sources. For example Figure 6 is a direct excerpt from the TSRR’s current employee timetable that provides a wealth of information regarding the railroad’s trackage and operations between Columbia, Tennessee and Florence, Alabama. Almost without exception, the geography underlying the data elements described in this figure are tied to TSRR milepost locations. Thus, the incorporation of mileposts in the GIS platform makes it possible to correlate railroad timetable information with data from both state and federal sources.³⁷

Figure 5 – Tennessee Southern Railroad, GIS Example



³⁷ See Tennessee Southern Railroad Co., Timetable No. 8, Effective 0001 CST, March 8, 2016. p. 6

Figure 6 – Tennessee Southern Railroad Employee Timetable Excerpt

FLORENCE SUBDIVISION						
↑ N O R T H W A R D	LENGTH OF AUX TRK IN FEET	MILE POST LOCATION	#	STATION	TRACK DIAGRAM	METHOD OF OPERATION
			A 233.1	A 233	COLUMBIA WYE 4.5	J
	3100	A 237.6	A 238	SIGLO WYE 0.8		
	1000	A 238.5	A 239	ASHWOOD 5.8		
	1209	A 244.1	A 244	MT. PLEASANT 11.5	BOO	
	650	A 255.6	A 255	SUMMERTOWN 8.8		
	500	A 264.5	A 263	ETHRIDGE 4.7		
	1400	A 269.2	A 269	LAWRENCEBURG 3.8		
	1650	A 273.0	A 273	NUCARBON 10.2		
	650	A 283.2	A 283	LORETTO 10.5		
	1540	A 293.7	A 293	IRON CITY 11.8		
	750	A 305.5	A 305	JACKSONBURG 8.4		
	3250	A 311.9	A 312	FLORENCE 0.4	BOO	
	3500	A 312.3	A 313	PATTON (COAL) ISLAND		



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